Claims

What is claimed is:

1. A thermal dissipation assembly comprising:

a first liquid cooling subsystem disposed substantially within an electronics drawer and positioned to extract heat from a heat generating component within the electronics drawer, said first liquid cooling subsystem including a first planar heat transfer surface;

a second liquid cooling subsystem disposed substantially external to the electronics drawer, said second liquid cooling subsystem including a second planar heat transfer surface; and

a biasing mechanism for mechanically forcing the first planar heat transfer surface and the second planar heat transfer surface coplanar when the electronics drawer is in a docked position in an electronics rack to facilitate the transfer of heat from the first liquid cooling subsystem to the second liquid cooling subsystem.

2. The thermal dissipation assembly of claim 1, wherein the biasing mechanism applies a perpendicular biasing force to at least one of the first planar heat transfer surface and the second planar heat transfer surface when the electronics drawer is docked.

3. The thermal dissipation assembly of claim 2, wherein the biasing mechanism comprises a spring biasing mechanism.

4. The thermal dissipation assembly of claim 1, wherein the first liquid cooling subsystem includes a first cold plate, the first planar heat transfer surface comprising of a main planar surface of the first cold plate, and the second liquid cooling subsystem includes a second cold plate, the second planar heat transfer surface comprising a main planar surface of the second cold plate.

5. The thermal dissipation assembly of claim 4, wherein the heat generating component comprises an electronics module disposed within the electronics drawer, and the first liquid cooling subsystem includes a module cold plate coupled to the electronics module and a pump for moving coolant between the module cold plate and the first cold plate to facilitate extraction of heat from the electronics module and dissipation of the heat to the second cold plate of the second liquid cooling subsystem when the electronics drawer is docked and the electronics module is operational.

6. The thermal dissipation assembly of claim 5, wherein the biasing mechanism comprises a spring biasing mechanism disposed between a pressure plate affixed to the electronics drawer and the first cold plate, wherein the first cold plate reciprocates perpendicular to the first planar heat transfer surface thereof with docking and undocking of the electronics drawer in the electronics rack.

7. The thermal dissipation assembly of claim 6, wherein the electronics drawer comprises one electronics drawer of a plurality of electronics drawers in the electronics rack, and wherein the second cold plate of the second liquid cooling subsystem is mechanically fixed relative to the electronics rack.

8. The thermal dissipation assembly of claim 1, wherein the first liquid cooling subsystem further comprises an evaporator heat transfer block positioned to extract heat from the heat generating component, a condenser heat transfer block including said first planar heat transfer surface, and at least one heat pipe interconnecting the evaporator heat transfer block and the condenser heat transfer block for transferring heat from the heat generating component to the first planar heat transfer surface of the condenser heat transfer block.

9. The thermal dissipation assembly of claim 8, wherein the condenser heat transfer block is mechanically fixed relative to the electronics drawer, and the biasing mechanism applies a biasing force to the second planar heat transfer surface when the electronics drawer is in the docked position in the electronics rack.

10. The thermal dissipation assembly of claim 9, wherein the electronics drawer comprises one electronics drawer of a plurality of electronics drawer in the electronics rack, and wherein the second planar heat transfer surface comprises a main planar surface of a system cold plate, the system cold plate reciprocating in a direction perpendicular to the second planar heat transfer surface with docking and undocking of the electronics drawer.

11. A cooled multi-drawer electronics rack comprising;

a plurality of electronics drawers, at least one electronics drawer of the plurality of electronics drawers having a thermal dissipation assembly comprising:

a first liquid cooling subsystem disposed substantially within the at least one electronics drawer and positioned to extract heat from a heat generating component within the electronics drawer, the first liquid cooling subsystem including a first planar heat transfer surface;

a second liquid cooling subsystem disposed substantially external to the at least one electronics drawer, the second liquid cooling subsystem including a second planar heat transfer surface; and

a biasing mechanism for mechanically forcing the first planar heat transfer surface and the second planar heat transfer surface coplanar when the at least one electronics drawer is in a docked position in the multi-drawer electronics rack to facilitate the transfer of heat from the first liquid cooling subsystem to the second liquid cooling subsystem.

12. The cooled multi-drawer electronics rack of claim 11, wherein the biasing mechanism applies a perpendicular biasing force to at least one of the first planar heat transfer surface and the second planar heat transfer surface when the at least one electronics drawer is docked.

13. The cooled multi-drawer electronics rack of claim 11, wherein the heat generating component comprises an electronics module disposed within the at least one electronics drawer, and the first liquid cooling subsystem includes a module cold plate coupled to the electronics module and a pump for moving coolant between the module cold plate and a heat rejection cold plate to facilitate extraction of heat from the electronics module and dissipation of the heat to the second liquid cooling subsystem when the at least one electronics drawer is docked in the multi-drawer electronics rack, wherein the first planar heat transfer surface comprises a main planar surface of the heat rejection cold plate.

14. The cooled multi-drawer electronics rack of claim 11, wherein the first liquid cooling subsystem further comprises an evaporator heat transfer block positioned to extract heat from the heat generating component, a condenser heat transfer block including the first planar heat transfer surface, and at least one heat pipe interconnecting the evaporator heat transfer block and the condenser heat transfer block for transferring heat from the heat generating component to the first planar heat transfer surface of the condenser heat transfer block.

15. The cooled multi-drawer electronics rack of claim 14, wherein the condenser heat transfer block is mechanically fixed relative to the at least one electronics drawer, and the biasing mechanism applies a biasing force to the second planar heat transfer surface when the at least one electronics drawer is in the docked position in the multi-drawer electronics rack.

16. A method of fabricating a thermal dissipation assembly for an electronics drawer of an electronics rack, said method comprising:

providing a first liquid cooling subsystem disposed substantially within the electronics drawer and positioned to extract heat from a heat generating component of the electronics drawer, the first liquid cooling subsystem including a first planar heat transfer surface;

disposing external to the electronics drawer, at least partially within the electronics rack, a second liquid cooling subsystem, the second liquid cooling subsystem including a second planar heat transfer surface; and

biasing at least one of the first planar heat transfer surface and the second planar heat transfer surface so that when the electronics drawer is in a docked position in the electronics rack, the first planar heat transfer surface and the second planar heat transfer surface are forced coplanar to facilitate transfer of heat from the first liquid cooling subsystem to the second liquid cooling subsystem.

17. The method of claim 16, wherein the biasing comprises biasing at least one of the first planar heat transfer surface and the second plan heat transfer surface with a biasing force disposed perpendicular thereto.

18. The method of claim 17, wherein the heat generating component comprises an electronics module disposed within the electronics drawer, and the first liquid cooling subsystem includes a module cold plate coupled to the electronics module and a pump for moving coolant between the module cold plate and a heat rejection cold plate to facilitate extraction of heat from the electronics module and dissipation of the heat to the second liquid cooling subsystem when the electronics drawer is docked in the electronics rack, wherein the first planar heat transfer surface comprises a main planar surface of the heat rejection cold plate.

19. The method of claim 16, wherein the first liquid cooling subsystem further comprises an evaporator heat transfer block positioned to extract heat from the heat generating component, a condenser heat transfer block including the first planar heat transfer surface, and at least one heat pipe interconnecting the evaporator heat transfer block and the condenser heat transfer block for transferring heat from the heat generating component to the first planar heat transfer surface of the condenser heat transfer block.

20. The method of claim 19, wherein the condenser heat transfer block is mechanically fixed to the electronics drawer, and the biasing comprises providing a biasing force which is perpendicular to the second planar heat transfer surface when the electronics drawer is in the docked position in the electronics rack.

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